Industrial FINISHING

Reg. U. S. Pat. Office

Devoted to Product Finishing in the Factory

Vol. XI, No. 11 | SEPTEMBER, 1935 | $2.00 a Year

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Published by

Practical Publications, Inc., 222 East Ohio St., Indianapolis, Indiana

Eastern Office: C. A. Larson, Mgr., 254 West 31st Street, New York City; Phone, Penna. 6-9049

Letters from Readers of "Industrial Finishing"

The names and addresses of firms or individuals whose letters and inquiries appear in this department may be had by writing this office, or letters addressed to them in care of this office will be forwarded promptly.—The Editor.

Flock Finish

Our organization has been very much interested in reading INDUSTRIAL FINISHING . . . We note in June issue that a continuation of an article on Flock Application appears, which was started in May issue. We are unable to find May issue and would appreciate it if you would send us a duplicate copy, so we can have the complete article on Flock Application.—S. A. C. Co. (Shears and Scissors).

Bleaching; Refinishing

The E. I. DuPont Co. suggested that we write you to inquire whether or not you have any data on the bleaching and refinishing of natural woods, such as used on the suburban bodies of automobiles. We will very much appreciate any information that you can give us.—A. C. D. Co. (Auto & Supply Co.).

Rust-Resist Coating

In going over some of the older issues of your magazine, we note in the April, 1935, issue a letter on "Rusty-Surface Paint" from C. F. B., page 50. We have the same difficulty, getting the rust off the steel before spraying, and if there is any primer that will cover this rust without having it removed, and that will enable us to have a smooth finish on our enamel, then we would like to know what it is . . .

The rust we have in mind is not a rust that can be removed easily. We take off all of the rust that can be removed easily with a wire brush, and also with other treatment, but this is the rust that does not seem to come off easily, and requires a great deal of work to get it off.—O. W. S. Co. (Specialties).

Glass Frosting

Please send formula for lamp and glass frosting. Although this can be purchased, we wish to know the formula, so we can control the intensity of whiteness of the frosting. Kindly tell us how frosting can be made with a dull surface, and also with a glossy surface. The names of manufacturers of the above will be appreciated.—V. I. A. (Manufacturing Artists).

Suede Finish

We have been referred to you by the DuPont Co., from whom we sought information regarding the new "Suede Type" lacquer finish to be applied to small wooden radio cabinets. The representative suggested that you had some information on this type of finish. Can you put us in touch with a paint or lacquer company, or someone who can finish our cabinets that way.—G. Mfg. Co. (Quality Radio Apparatus).

A Penetrating Black; Dip or Spray

We are interested in making connections with some firm that produces a black paint that can be easily applied and absorbed into metal, so that it will not show marring or scratching readily—something similar to that used for stamping or toy finishing. *(Continued on page 6)*

COLOR—

the Short Cut to Successful Sales

Today, the sales appeal of color is definite and specific. The right color means more sales and increased profits.

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Available in the popular colors that provide that eye-catching touch for your toys, and in many other brilliant, enchanting colors for wood handles, novelties, etc.

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Pittsburgh
Portland, Ore.

We are also interested in solving the problem of finishing bed springs in aluminum. We are not sure whether dipping or spraying would be more satisfactory. — S. N. B. Co. (Bed Springs, Metal Beds).

Iron Work Finish

In July issue of INDUSTRIAL FINISHING, on page 16, there appeared an article entitled "Ornamental Iron Work," writeen by Mr. J. E. Greene. We shall appreciate your advising us where we can obtain this finish.—C. C. Co. (Chemicals).

Old World Finish

I have heard of an Old World Finish, or am I wrong? Have you any information on it? I am supposed to work on a piano which must have this finish. Is it a finish or a color? —J. N.

Alkali Resistant Lacquer

On page 59 of May, 1935, issue you mention an alkali-resistant lacquer called "Clorsol." Will you please give us the name of the maker of this material so we may obtain a sample? —L. T. Co.

EDITOR'S NOTE: It's the St. Louis Surface Paint Co., 4201 Arlington, St. Louis, Mo.

Air-Driven Sander

In May issue of INDUSTRIAL FINISHING we saw described a portable air-driven sander that tones surfaces (pages 33, 34). Will you kindly give us the name of the manufacturer?—M. Chair Co.

EDITOR'S NOTE: It's the Sterling Products Co., 314 Curtis Bldg., Detroit, Mich.

Maple Finish

We are making a line of maple, using what we think is an accepted standard finishing formula, including pigment stain and lacquer. Results have not been satisfactory; we have trouble with our finish peeling. We know this has been overcome by some manufacturers and we are wondering if you can put us in touch with either some company whom you think might be able to help us, or any individual who is an expert on these matters.—J. Chair & Furn. Co.

Flexible Lacquer

I am interested in a flexible lacquer for fabrics and for fish skin flowers. Please let me know who manufactures such a product.—O. S. D.

Morroco Finish

Will you please tell me the name of the manufacturer of Morroco Finish, as listed under 1934 Developments, in January, 1935, INDUSTRIAL FINISHING magazine?—S. R. Co.

EDITOR'S NOTE: It's Berry Bros., 211 Leib St., Detroit, Mich.

Fireproofing Wood

Some time ago you had an article on a material for fireproofing wood products. We can not locate this item, and ask that you kindly furnish us with the details and the name of the product.—S. T. (Artistic Wood Products).

Fire Resistant Paint

I noticed in a recent issue of INDUSTRIAL FINISHING it was stated that a fire-resisting paint was being manufactured by General Surfaces Co. of Chicago, Ill. Will you give me the full address of this firm?—V. H. M.

EDITOR'S NOTE: It's 6636 S. Park Ave.

Metal Cleaning

We would like to get a copy of INDUSTRIAL FINISHING containing the article by M. M. Miller, on "Cleaning Refrigerator Parts."—N. Stamping & Enameling Co.

EDITOR'S NOTE: The article appeared in June, 1935, issue, pages 9, 10, 11.

In your August number we find, on page 38, a brief description of metal cleaning. We are interested in the plan outlined . . . to wash in naphtha to remove oil, and then wash with a chemical cleaner, "name on request." We would like to know the name of the cleaner and its manufacturer, or the formula used in making the cleaner suggested by Mr. Miller.—F. Stove & Oven Co.

(Continued on page 51)

Manufacturers of:

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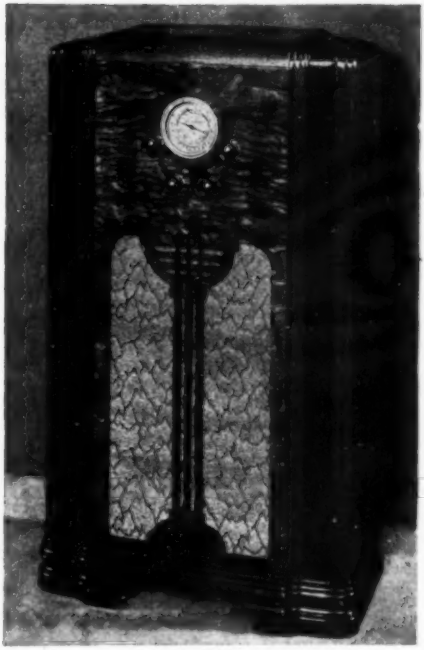

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Product

Design and Finish

Can Produce More Sales

by Blaine Stubblefield

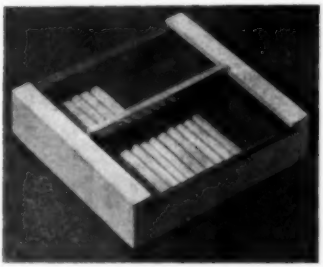
Finishing materials are important factors in the technique of designing for better sales appearance in manufactured products, therefore skilled design services can be used in the finishing field as an effective sales help for all manufacturers and users of paints.

TO MAKE a product easier to sell—even make it sell itself to more and more eager buyers — is the ambition of every progressive manufacturer. The solution of this problem is: Make the product more uptodate. Make it better in utility, durability and safety. Make it more attractive and striking in appearance. The improved appearance of several well known products, by means of modernized design, finish and decoration, has accomplished remarkable results for a number of nationally known concerns.

There is a strange twist in humanity that makes every man believe himself a good judge of human nature; every business man believes himself a good advertising man; and a great many assume they are either designers or good judges of design. That they are not is cried aloud by so much merchandise which all authorities adjudge indifferent to poor. Happily though, this bulk of poor design constitutes an opportunity for those who specialize in producing good designs.

Until recently able men did not go into design for machine production because neither the idea nor the job was respected. Now, in some of the largest and most progressive companies, the designer sits at the right hand of the boss, along with financial and production and sales executives. Materials and manufacturing processes can easily be arranged to conform to the improved design of any product. Incidently new designs frequently make possible some interesting production economies, through the cooperative efforts of the designer and production engineer.

Some products, as now made, do not necessarily need reshaping —only redressing, redecorating or



The cigarette box is of mahogany lacquered white outside; the top is of clear glass with a chromium handle. A product of the Russell Wright Studios, New York.

refinishing—to give them a completely restyled appearance. But to develop a really modernized design which has that desirable touch of originality, as contrasted to easily recognized cheap imitation, calls for the services of an able designer.

Not all manufacturers are poor judges of eye appeal in products. Some few of them have studied design seriously. But most industrialists, not versed in art and its application to industry, should secure reliable designers. It is truly amazing to see how a skilled artist can turn an ordinary object into a thing of beauty that will captivate people's interest. Perhaps you have noticed the Toledo scales designed by Van Doren and Rideout.

Miniature Models

Model demonstration is an excellent way to portray the possibilities of new lines of form—and the miniature models can be dressed up in different colors or finishes to help the judges make a decision as to what combination gives the most attractive or appropriate appearance. Motion picture producers, requiring varieties of new and striking furnishings and settings, have done much to bring about a versatile technique in model making. Also, the arrival of new, easy-working plastic woods, clays, metals and adhesives has facilitated the art. It is now fairly easy to make a good model of almost any simple structure.

Selecting a Designer

How can the industrial manufacturer, wishing to use design as a sales help, find the right designer? And how can he get the best results from his services?

The first consideration is that a man may be a first-rate artist, but he is not a good designer until he has had experience with materials, with production methods, and with the hard realities of making things to sell at a profit. Several manufacturers have been taken in by designers with bright ideas and the ability to draw beautiful pictures.

In most of the manufacturing cities there are some able and practical designers, and they are usually known to leading firms and to advertising agencies. In New York City there are said to be about 10,000 artists, counting students and all, of which it is my guess there are upwards of 150 able to do good work for industry. About 30 of these are nationally known for outstanding results. The National Alliance of Art and Industry, at 30 Rockefeller Plaza, has a placement bureau that lists quite a number of them, with their records and qualifications.

Designers usually work either on a free-lance (single job) basis, or on part-time annual retainers, or on full time as company staff members. Most of the nationally known men divide their time among several clients for annual

The new Philco Radio Model 650MX, designed by Ben Nash, creator of all the Philco lines, is paneled in figured East Indian laurel with contrasting areas of plain laurel to achieve harmony and richness. The clear lustrous finish is hand rubbed. Press a button and the top swings up, revealing the instrument panel.

fees, meanwhile doing single jobs when required. Many able designers devote all their time to single clients as staff members, especially in industries where design is highly technical. A large number of good men are unemployed and will accept either free-lance or full-time jobs.

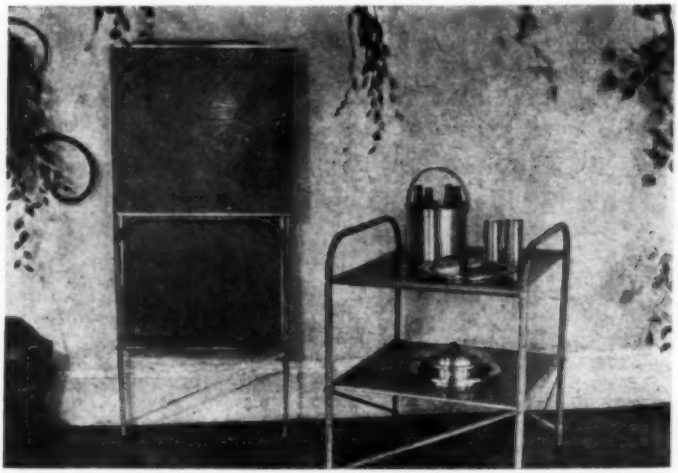
The argument against one designer working constantly with one company on the same product is that he gets into a rut and his imaginative power, concerning that job, declines. For that reason, ambitious designers will not stay on the same project too long.

How Much to Pay a Designer How to Get Results

It would seem to me a good idea to find a reputable man and try him out on a free-lance basis, and then, if his work shows profitable results, stick by him for a while.

The fees in the design profession are indeterminate, as they are in law and medicine and others. You can buy a major design job for $50 or $50,000. Because his mistakes cost so much, a cheap designer is usually worse than worthless; but not always. An unemployed man hungers for action, and if a living goes with it, okay by him. Top designers make up to $100,000 a year; good men are starving. An ordinary executive's salary will hire a good performer.

How should the boss work his designer to plow the most ground? The quickest way to sterilize an artist's brain is to tell him what to do. That, I would say, is the one thing not to do. Don't ask him to stick to practicalities. Let him show you every new concep-



Products of the Russell Wright Studios in New York have set a new mode in service furnishings. The serving table is collapsible for outdoor service. The bamboo and walnut parts are finished in clear spar varnish, and the plywood areas in Chinese red, waterproof, alcoholproof lacquer. These Wright products are excellent examples of modern design in which simplicity and ingenious convenience are combined for beauty.

tion he can think of. New things are not usually found along the beaten way. Practical men had been building turnstiles a long time when John Vassos, designer, devised one with arms at right angles, that took only half the space and looked better. It was a master stroke in simple logic, and many a good turnstilist must have blushed when he saw it.

A good designer is a man with a creative turn; he should be given full rein. The more ideas he hatches, the better your chances of getting a ringer. You can always reject his proposals simply by proving them impractical. If he is a good man he will make you prove it before he'll quit.

The designer must be given complete information about all of the company's production and sales problems. He should know what efforts have succeeded and what have failed. He should know the company's plans and its prospects. There should be no personal antagonism; the designer does not substitute for or displace any member of the staff. He is an additional factor in the sales setup.

A number of progressive manufacturers of finishing materials employ one or more high class designers in their creative design and art studios—to work out suggested designs, finishes, color schemes and decorative features for the products of their customers. It's a tremendously effective sales help for the customers and for themselves. Better designs, more sales.

It is comparatively easy to develop plenty of trick ideas that seem interesting, but it takes thorough knowledge of the prospect's problems, and a genuine creative

For several decades, manufacturers made their products purely for use and not for looks. When it seemed necessary to pretty up a bit, they allowed some "artist" to design an imitation of some handicraft their ancestors had produced. The results everyone knows: Curly iron and scroll-saw jiggers and imitations of other materials. Charming in their way, those Victorian things, but whether you like them or not, the public is in the process just now of rejecting them en masse. . . . .

effort, to give him real help. Of course it would be fatal to tamper with any of the technical angles of manufacturing in such a cursory manner. But simple merchandise can often be improved with a little serious effort. And almost any product (assuming it is poorly designed, as many are) can be improved with a better color scheme alone. Sometimes a product can be improved and costs reduced at the same time, simply by removing some extraneous decorative part.

Dry Cleaning Metal With Airless Abrasive Method

The American Foundry Equipment Co., 555 Byrkit St., Mishawaka, Ind., has appointed Mr. Martin H. Kidder as their Industrial Relations Director, to serve industrial and product engineers in the application of the "Wheelabrator"—the airless abrasive cleaning method—to their problems.

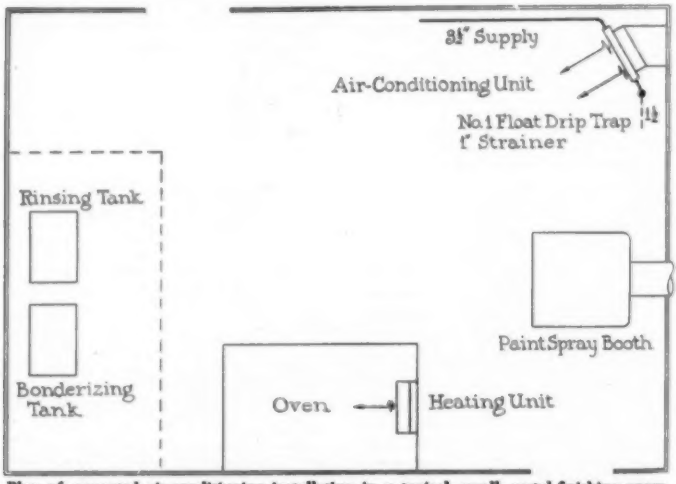
Laboratory research and actual tests on metals have shown this economical mechanical method can be applied to most production problems requiring cleaning and preparation of materials for finishing, with results of important interest to all executives responsible for improved sand-cleaning methods, new surface finishes or production cost factors.

Air Conditioning in the Finishing Room

by R. L. Towne
The Trane Company

EVERY industrial organization manufacturing a product that must be finished and painted before it is marketed, whether the product be automobiles or toothpaste tubes, should be aware of the value of air conditioning in this portion of the manufacturing process. Perhaps no other branch of industry calls for such accurate control of atmospheric conditions, so that efficiency and economy of operation are commensurate with cost, and so that uniformity in product appearance will result.

There is such a wide variant of practices in finishing the thousands of products turned out by American industry that to give a complete treatise of the subject would require a work as voluminous as an encyclopedia. However, we may use, as a basis of design, certain standard practices which laboratory experimentation and practical usage have proved most desirable. In the accompanying layout, complete equipment for an



Plan of suggested air-conditioning installation in a typical, small, metal-finishing room.

average metal-finishing room is shown, from bonderizing and rinsing tanks to ovens and spray booths. Attention may be paid to only that portion of the layout which is of interest to the reader. For purposes of illustration, the entire layout has been made small and served by only one air-conditioning unit.

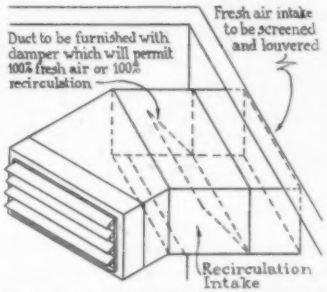
Baking Process

Air conditioning is so often thought of in terms of cooling only that there is a tendency on the part of all industry to overlook the fact that drying and high temperature handling of air is just as much conditioning as obtaining and maintaining proper cooling and humidity conditions. In the baking oven of a paint shop, temperatures of from approximately 300°F. to 400°F., for from ¾-hour to 3-hour periods are necessary for some finishes. For others, one to 2½ hours at 160° to 225°F.; and for certain fancy finishes, temperatures of 180° to 225°F. must be maintained from three to five hours.

Controlled Temperature

These temperatures must be maintained accurately at all times so that complete uniformity in the finish is obtained. Some enamels require only a 2-hour heat treatment at 140°F., but this is simply a forced drying proposition, and many firms find it not adequate to their needs. The ability to maintain these several temperatures, or to switch from one to another in the baking oven, is of extreme importance — and equipment such as the finest blast heater surface is necessary in order to obtain such close control.

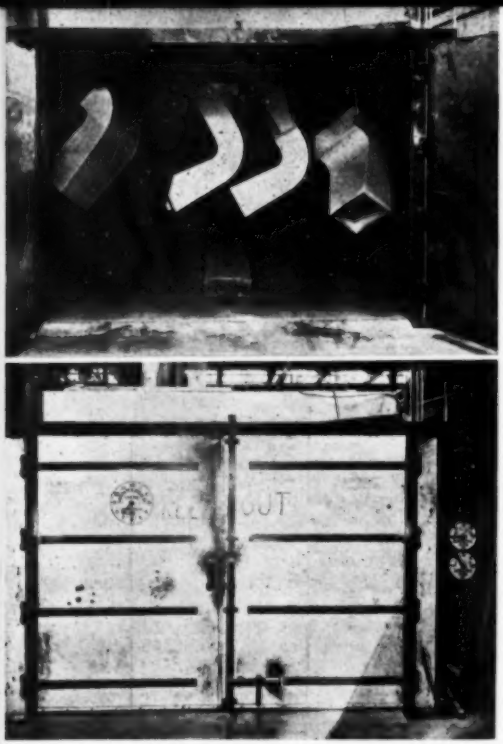
As a standard, it may be said that if a 300°F. temperature is to


Fresh air intake to be screened and louvered
Duct to be furnished with damper which will permit 100% fresh air or 100% recirculation
Recirculation Intake

Close-up of air-conditioning unit mounted high in corner of the metal-finishing room.

be maintained, it would be possible to obtain this with about 100-lbs. of steam. It has been found through practice that the best type unit for an oven installation of this character would be a suspended type heater which saves valuable floor space, the unit having an air capacity of 2000-cu.ft. per minute and a delivery temperature of 325°F. when recirculating air at approximately 221°F. This means a mixture of 25% room air at 70°F. and 75% recirculated air at 295°F. The unit, of course, would require the necessary traps and steam control valves.

For this control, it is better to have a manually-operated valve, due to the fact that temperatures required for various finishes vary from 100°F. to practically 325°F. After the load has once been balanced by adjusting the steam supply, there would be no other adjustment necessary. However, if automatic control is required, it is suggested that four thermostats adjusted for various temperature ranges with provisions for switching from one temperature to another be used. In the steam supply line, a 3-in. motor-operated



Inside and outside views of small drying oven for bake finishing. Control instruments are at right, lower view.

valve could be utilized to control the temperature of the leaving air from the unit.

As to the oven itself, it is recommended that this should be substantially constructed and well insulated . . . with air space between the insulating walls . . . The oven must be well ventilated in order that the volatile constituents of the finishing material may escape easily. If this is not provided for, there is a tendency for these volatile constituents to dull the finish, which otherwise would be of a glossy type. In order to accomplish this, the exhaust duct in the oven should be of ample size to take care of the exhaust air.

Spray Booths

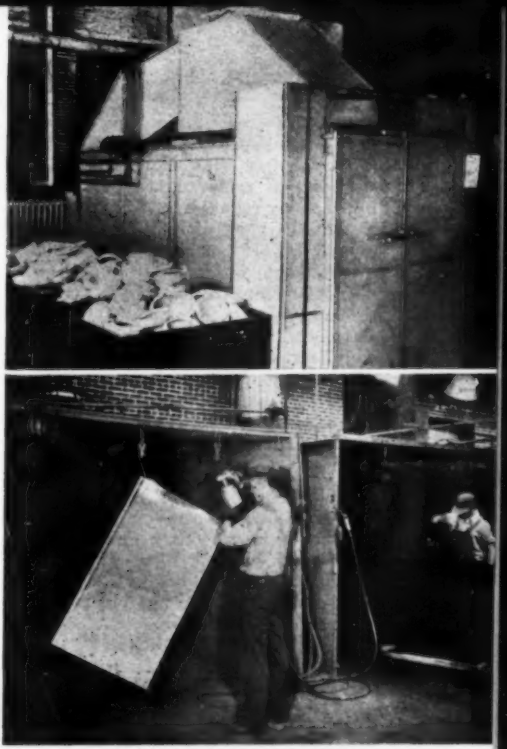
Spray booths are usually of sheet metal construction (three sides, a top and a floor) but they must be properly ventilated and shielded so that dust and dirt have little if any opportunity of coming in contact with the products being finished. Ideal temperatures for a paint room — where spray booths, bonderizing, rinsing tanks and oven are in operation — seem to be 70°F. in winter and 85°F. in the summer, with a 30% to 40% relative humidity in the winter and 50% relative humidity in the summer. These conditions seem to be best for maintaining employe efficiency, improving health, saving material and time, preventing shut-downs, and in other ways cutting operating expenses and costs.

A function of the air conditioning equipment is to prevent contamination of the air, and in some cases this equipment must perform the further duty of reclaiming the enamel or lacquer which is sprayed past the product into the ventilating ducts. A suspended-type air conditioning unit, such as is indicated on the plan illustration, is perhaps the most ideal set-up for installations of this character. It is exceedingly economical and efficient, takes up no floor space, and its original cost and cost for installation are very low. This unit must be so designed as to operate on a damper

control basis so that during the period of heating up, 100% recirculated air may be supplied by the unit; but after the shop is in operation additional fresh air must be introduced to compensate for what is forced out by the different exhaust fans in the oven and spray booths.

Reclaiming Waste Spray

The trend in many finishing rooms, in this day of synthetic enamels, is to reclaim the enamel which passes the product in the spray booth and goes into the exhaust duct. This can be accomplished by the installation of suitable filters or eliminator plates in the back of the spray booth to prevent the paint or lacquer from entering the exhaust fans or the exhaust duct. These "paint catchers" may be so designed as to be readily removable and may be dipped into tanks where the reclaiming process goes on . . . The liquid of the reclaiming process will remove the paint so that it can go through a refining process. In some cases it has been noted that washers have been used for this purpose . . .



Above: Controlled drying equipment in finishing room. Below: Spray booths . . . . with baffle exhaust at rear.

The Air-Conditioning Unit

The unit for such an installation is simplicity itself. It consists of heating and cooling coils of the light-weight, heat-transfer-surface type, a filter, motor, blowers, controls, etc. The unit must be so designed as to operate either on the direct expansion principle or, if cold enough city water or well water is available (nothing more than 55°F.), water may be used as the cooling medium in the summer. This, of course, cuts down the operating cost of the system materially. The comfort advantages to employes working in the room are numerous.

In this respect, it might be well to mention that in two industrial plants where workmen were under conditions similar to that in a paint room, a two-year survey showed that a saving of $11.90 per year per employe was effected in the plant having air conditioning. It is interesting to note that this saving does not include an

evaluation of increased employe efficiency, but takes into consideration only the fact that employe absences due to minor illnesses were appreciably reduced.

Air conditioning in industry has proved itself many, many times over, but air conditioning in industrial finishing rooms shows quicker returns for the amount of investment than in almost any other application of this new science. It is no longer a technical or engineering luxury but an absolute economic necessity.

Handle Waxing

HAVE YOU ever noticed and admired the smooth clean hard wax finish on natural wood handles you find in new tools in hardware and general stores? It is an attractive and fairly durable, transparent finish that has been developed in most cases, by the handle manufacturers themselves. Their business is highly competitive, therefore the finish they use must be a very low cost and simple proposition, both in material and application.

One of our friends, traveling through some of the handle manufacturing territory recently, reported the following observations:

The wax is moulded in solid lumps of a convenient size and shape for the workmen to hold against a traveling belt—a canvas or fabric belt against which the handle is pressed and skillfully rotated by hand to apply the wax coating. These lumps or bars of wax are usually prepared and moulded right at the handle factory. The material generally consists of various mixtures of wax, rosin and dry white lead, to which is sometimes added small quantities of varnish or linseed oil, all of which is purchased from regular material supply houses. The proportions used vary according to the handle manufacturer's past experience, his knowledge of materials, and the final results desired or demanded by his customers. For example, one manufacturer is using a mixture made up of the following materials:

White Beeswax (parts)	5
White Rosin	½
White Lead	4
Dammar Varnish	⅛

He melts the beeswax; crushes, melts and stirs in the rosin; adds white lead while stirring, and finally pours in the dammar varnish. While still in a liquid state, this material is poured into small paper bags which serve as moulds.

Another mixture contains:

White Rosin (lbs.)	10
Paraffin (lbs.)	2
White Lead (tablespoonful)	2
Linseed Oil (pints)	½

The finished product looks like beeswax, but is lighter in color. The rosin and paraffin are melted and mixed and allowed to cool somewhat before stirring in the white lead and linseed oil—this to prevent foaming.

Furniture Show, Nov. 4 to 9

The American Furniture Mart's board of governors announce a one-week fall market at the Chicago Mart, to be held Nov. 4 to 9. The next winter market will be held Jan. 6 to 18 inclusive, in Chicago.

Rubber in Paints

A short informative report about the use and results of rubber in paints, with formulas for paints containing rubber, has been prepared by The Rubber Growers' Association, 19 Fenchurch St., London, E. C. 3, England. Copies may be obtained by writing the above association.

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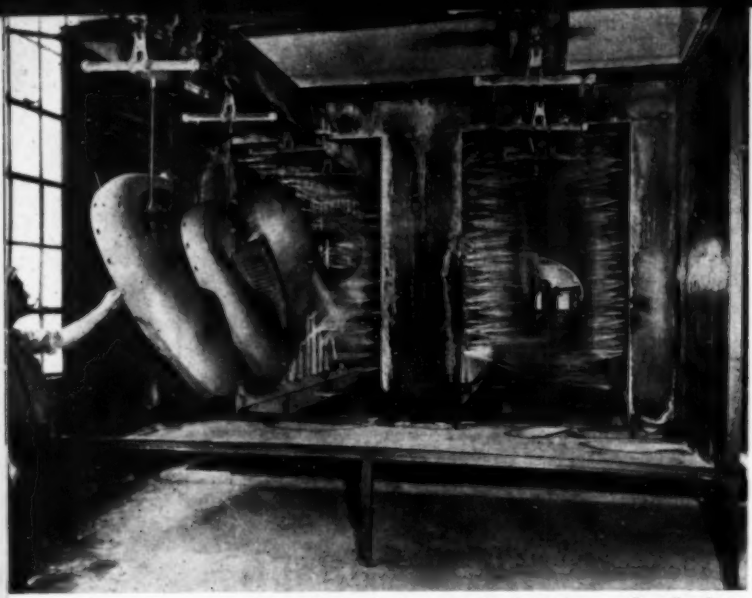

Automotive parts entering the bonderite spray booth in the new Spra-Bonderite system now in operation in the modern sheet metal plant of the Buick Motor Co.

Rust-Proofing Buick Parts by Spray System

REPRESENTING what is said to be the last word in providing protection for metal parts against corrosion and the action of the elements—this is the new rust-proofing process recently placed in operation at the plant of the Buick Motor Car Co., Flint, Mich. The new Bonderizing process employs the spray rather than the immersion method, and is the latest development of the Parker Rustproof Co. With it, all stamped metal parts and numerous other parts are protected prior to lacquering or enameling against rust and the effect of weather.

The process is a further development of the basic Bonderizing system, which consists intrinsically of giving the metal parts a phosphate crystalline coating which not only prevents corrosion under the finish but also prevents spreading of corrosion from accidental scratches which penetrate to the bare metal — thereby increasing life of finishes. Further, it is said to provide an excellent adhesive base for the application of finishing materials.

Among the advantages of the new spray process, as installed at Buick, are:

1) Greater rust-proofing efficiency and consistency.

2) Ability to work with lower temperatures.

3) Higher output for a given floor space.

4) Higher rust-proofing output per dollar expended.

5) Freedom from the carrying over of inert materials on the part being bonderized.

6) Elimination of special alkaline chemical cleaning prior to bonderizing, preventing any chance of such cleaners neutralizing the bonderite solution.

7) Better working conditions for the operators.

Interior view of one of the Bonderite spray booths, with sprays turned off to show the spray nozzles more effectively.

Process Is Automatic

The entire process from cleaning, through bonderizing, fixing, and drying, is automatic, with parts carried through on two conveyors. In all there are eight steps in the entire process which prepares the metal parts for the application of finishes, including six pressure-spray booths.

Parts, as they are hung on the conveyor, are given a kerosene wipe. This is not intended so much to remove oils, etc., as to break up such oils and drawing compounds. Conveyors carry the parts immediately into the first hot water spray where virtually all foreign material is removed due to the pressure action of the sprays.

The conveyor then carries the parts through a second water spray for additional cleaning, and into a third spray in which a weak acid solution has been added to the water to condition the surface for bonderizing.

Each of these three units is self-contained, with its own tank and circulating pumps, thus minimizing the possibility of contaminating subsequent washes with material removed from the parts in the earlier stages.

The first three units, however, are combined in one enclosed installation for cleanliness, as are the last three. Between them, the parts pass through an open space where they can be inspected for cleanliness; then they go directly into the bonderizing or processing booth.

1000 Bonderite Spray Nozzles

The bonderite solution for this unit is maintained at only about 170°F., as against virtual boiling temperatures in the dip process. Further, only one minute is required for the processing with the spray installation, as against 5½ minutes for the dip method. The strength of the solution is held to a one point tolerance, with peri-

odic checks using sodium hydroxide. There are almost 1000 nozzles in this booth, supplied by two 1000-gallon-per-minute pumps from an 8150-gallon tank, under a pressure equivalent to a 50-ft. head.

From the bonderite booth the parts go into a cold water spray booth where any slight carry-over of bonderite solution is washed off, again using pressure spray—through some 600 nozzles at a better than 1000-gallon-per-minute rate. As a matter of fact there does not appear to be any appreciable carry-over of bonderite, a very slight overflow of the 5000-gallon water supply tank for this rinse being adequate to keep the water free from contamination. While only cold water is added, the actual operating temperature here seems to be around 130°F., due to a temperature carry-over in the parts from the processing booth, a desirable feature.

Very little inert material from the bonderizing process seems to be carried over into this rinse. This is due to the fact that the small amounts of dissolved iron, resulting from the bonderizing process, do not adhere to the parts as in the dip method but are washed off by the bonderite sprays themselves, and settle out in the bonderite tank.

The last stage in the process itself is an acidified spray rinse. The solution here is also quite weak—about 1-lb. to 100 gallons—with a free acid content in the water of less than two points required. The object of this spray of course is to completely remove any remaining bonderite coating, fixing the phosphate coating, and preventing any chance of weakness developing under the paint. Two 1250-gallon-per-minute pumps spray the solution through some 600 nozzles in this booth, a 5500-gallon supply tank being used.

The conveyors then carry the parts through a gas-fired drying oven maintained at around 300°F., and are ready for enameling, lacquering, etc.

No Special Cleaners Needed

The process makes unnecessary the use of sodium meta-silicate or similar alkaline compounds in the early washes. In other processes these are used to cut the drawing compounds and greases. While satisfactory from that standpoint, such compounds, if carried over on the parts, have a tendency to neutralize the bonderite, thereby not only affecting the solution, but also offering a possibility of incomplete rust-proofing.

The application of this spray process with circulating pumps reduces the bonderite tankage requirement by four-fifths, an 8100-gallon tank being used at Buick as against a normal 40,000-gallon dip tank, increasing efficiency and ease of control, as well as reducing cost.

The adoption of this less sensitive and more efficient rust-proofing method has incidentally enabled improvement in working conditions. With the dip system, with its higher temperatures, the rustproofing department was formerly completely closed, resulting in high room temperatures especially when enamels were used for finishing. With the new system the need for such conditions has been eliminated.

Better Base for Lacquer

In addition to its other qualifications, the new process appears

M.&W.Co. 1876

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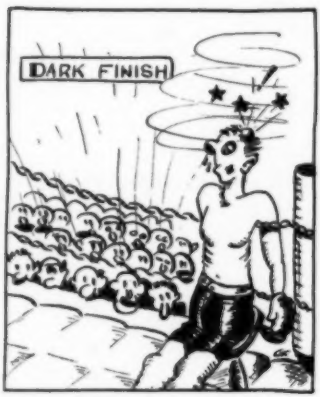
to provide an excellent base for subsequent lacquering. This is probably due to the fact that the dispersion of the crystals of the coating is such as to give better mechanical adhesion. This is particularly noticeable with sheet metal parts, such as fenders, which are subsequently given a "rubber" coating before applying the prime coat.

The installation itself materially reduces operating costs and the ability to use lower temperatures throughout naturally is directly reflected in fuel savings.

Guide to Lacquer Quality

THE working qualities of a lacquer—that is, its tendency to blush, the smoothness of the film and freedom from surface defects, and the amount of sanding and rubbing required—are important factors in determining finishing costs, and therefore a simple guide to these working qualities is of real practical importance to a finishing foreman. Such a guide which will give a surprisingly accurate indication of the general working qualities of a lacquer is the percentage of n-butyl compounds—butanol and butyl acetate—present in the lacquer after reduction with thinner to spraying viscosity.

For comparative purposes it can be stated that a lacquer containing less than 20% of butyl compounds is of inferior quality, one containing 25 to 30% is of fair quality, and one containing 35 to 40% of excellent quality. The use of this guide when purchasing lacquers and thinners will aid in selecting a product which is suitable for a given job, thus eliminating to a great extent the trouble and expense of attempting to use lacquers or thinners of unsatisfactory quality.



Alsop Appoints Pittsburgh Man

Alsop Engineering Corporation, 39 West 60th St., New York, N. Y., has just appointed George E. Wilcox its representative in the Pittsburgh territory. Mr. Wilcox has acquired a great deal of knowledge concerning liquid processing machinery and methods through his many years of experience as a sales engineer in kindred fields. His office is located at 1201 Metropolitan St., Pittsburgh, Pa.

Spray-Painting School

The DeVilbiss Co., Toledo, Ohio, announces the schedule of their training school for the last half of 1935. This school is open to industrial painters, master painters, automobile refinishers, and all others interested in learning the technique of spray-painting equipment.

The training period lasts for one week. Classes will start on September 23, October 21, and November 18. These classes have been well attended in the past because of the facilities for study, otherwise unobtainable, offered by The DeVilbiss Research Laboratories.

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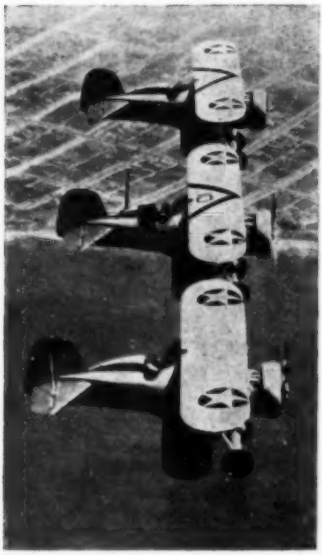

Aircraft Insignia—III

on Commercial and Military Airplanes

by George A. Endom

This article in the series starts with "Application of Insignia" and includes complete instructions for laying out and putting on the familiar 5-pointed white star as shown in the illustration; also rudder insignia for Army planes, and insignia and markings for the U. S. Naval Aircraft.

ARMY SPECIFICATIONS for application of insignia: "Cover the entire area with white by spray gun; then mask the figure of the star and spray the blue; mask all but the center circle and spray the red." While this method of application is good, it is hardly practicable unless production warrants keeping at least two spray guns continuously on these colors, and a standard mask is devised that can be used many times. I would hardly advise the use of this method, especially on dopes or lacquers, as (all coats being solvent with one another) considerable difficulty will be encountered trying to keep the red from "bleeding" into the white. Assuming the use of unskilled or semi-skilled labor for this operation, one trace of red can ruin the whole wing cover.

Before going further, I want to impress the importance of never allowing any trace of red to get into the white. In nitrate dope and lacquer, insignia red is so powerful (especially when a retarder has been incorporated to eliminate blushing in humid weather) that it immediately dissolves all under coats, seeps into the fabric and only in rare instances can it be sealed. When it is sealed that section will probably be so brittle that checking or "crazing" will start as soon as it is exposed to the sun's rays.

Quality
FROM THE START
Glidden chemists and color experts—backed by almost limitless research facilities are constantly checking, constantly working on new ideas, new products, new and better ways of doing things.
From the analysis of raw materials, through manufacturing process to the finished product, rigid standards are established which assure uniformity of quality.
Glidden is interested in the problems of its customers—willing to help them to develop new and broader markets—anxious to show them how to make more profit in their finishing department.
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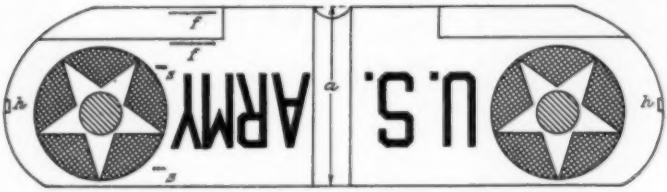


(This cut appeared upside down by mistake in August issue, page 24.)

Underside of lower wing, where right wing is at right, and left wing is at left in illustration. The leading edge is at bottom of cut; trailing edge is at top. "A" is chord length, "h,h" hand holds in black; "f,f" finish code lettering, top side only; "s,s" strut numbers, top side only. The lettering "U.S.Army" is in black. The insignia consists of a white, 5-point star with a red disc inside and a blue field outside.

Attempting to wash the film off down to the fabric results in an awful mess; the insignia will present such a terrible appearance it will probably result in having the complete wing cover rejected. *So, be careful of the red.*

The second method of application outlines the use of colors in oil (or japan), but as these base colors are not as durable as nitrate dope colors over nitrate dope fabric, they are only used on metal surfaces.

After a number of years in attempting to find the quickest way to apply this insignia, with assurance of clean, sharp outlines and flexibility of finish, I am of the opinion that the following method is the best:

Laying Out the Insignia Masking Parts of the Design

First, lay out the design. The star can be made by taking the diameter of the outer circle, multiplying this diameter by 3.1416 and dividing by five. The diameter of the inside circle is determined by drawing a pentagon (formed by the inner points of the star) and having this circle tangent with the lines of this pentagon.

Next, mask the outline of the star and apply two to three coats of white nitrate dope. Allow this to dry thoroughly; then mask off the blue field and the inner red circle. Apply two to three coats of these colors.

Be sure to seal the edges of the masking tape, rubbing well over any uneven surfaces, before applying the colors, and remove the masking tape as soon as the dope has set, but before it is thoroughly dry. If the dope is allowed to dry, the film overlapping the edge of the tape may be too tough to break at the edge, and, as some of the solvents in the dope may still be active, it may cause the color to peel, especially over an aluminum base.

Cloth tape has given me considerable trouble with "feather" edges, so I use a crepe-paper masking tape from a well-known manufacturer. This tape was made for porcelain refrigerator work and the adhesive gums never "bleed" from the dope solvents. Some paper tape does this but if your manufacturer of masking tape understands the need of a non-staining adhesive on the paper tape, he can readily furnish a kind that will not "bleed." When the insignia is thoroughly dry, any slight irregularity which may

ADVERTISING PAGES REMOVED

be caused by poor masking can usually be scraped clean with a razor blade or sharp knife. For this reason it is a safe procedure to slightly overlap contiguous colors. But remember where the red circle is slightly irregular it is safer to re-mask, increasing the diameter 1/16-in. rather than try to remove or cover that color.

Rudder Insignia

The rudder insignia for the Army Air Crops is laid out as follows: One-third of the distance at the widest point between hinge-post and trailing edge receives a vertical blue stripe. The remaining two-thirds receives 13 alternate horizontal red and white stripes of equal width.

The blue vertical stripe is situated in front of and around the hinge-post. The horizontal red and white stripes cover the remaining section to the rear and consist of seven red and six white stripes. A rudder having a forward balance section is finished on that balance section in the same color as the vertical stabilizer or fin to which it is attached.

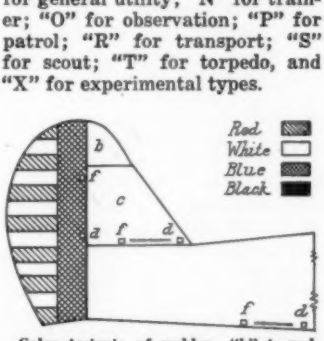
One method of application is to spray the whole rudder (less the balance section) with white insignia dope; next, mask off the portion for the blue vertical stripe; finally, mask off the red horizontal stripes. Another method is to follow the same procedure as in applying the star insignia to the wings. Pigmented nitrate dope is the material used on fabric covered rudders; on metal rudders japan colors or insignia enamels are the finishes.

It should be remembered that the star insignia and the rudder insignia colors are always applied only after the fabric has received its regular finish of clear and pigmented dopes, although on rudders, if the first method of applying the insignia is followed, it will only be necessary to apply one coat of the body color of pigmented dope.

Naval Aircraft Marking and Insignia

The standard lettering and marking on Naval Aircraft differs from Army Air Corps marking in the location of the star insignia; the simplification and location change in the finish coding; the changes in pipe line marking (due to added standard equipment), and the application of the rudder insignia.

Briefly, the symbols used to designate the type of aircraft are the letters: "B" for bomber; "F" for fighter; "H" for ambulance; "J" for general utility; "N" for trainer; "O" for observation; "P" for patrol; "R" for transport; "S" for scout; "T" for torpedo, and "X" for experimental types.



Color insignia of rudder. "b" is rudder balance; "c," fin or vertical stabilizer; fff, finish codes; ddd, inspection patches.

These symbols should be noted, as they are used in conjunction with the initial letter assigned to the aircraft manufacturer, which is placed on the rudder instead of being incorporated in the finish code as on Army Corps airplanes.

Navy Pipe-Line Markings
Propeller Striping

All pipe lines for liquids and metal tubing for the leading of control cables receive the same marking as on Army aircraft except, a) fire extinguishers and lines are identified by brown coloring instead of blue; b) light blue is used to identify all flotation equipment; and, c) all oxygen lines are marked light green.

An added item is the banding of propellor tips. All the propellors, prior to installation, are painted on both sides of all blades in the following manner: From tip to 4-in. from tip a band of insignia red; next, a 4-in. band of bright yellow; third, a 4-in. band of insignia blue.

The remaining part of metal propellors is left unfinished, except, at the discretion of the inspector of Naval Aircraft, on the side facing the rear, the blue band may be extended (or dull black may be used) 24-in. to prevent the glare, caused by reflection of the sun, from blinding the pilot.

As nearly all propellors used on Naval Aircraft are of stainless steel, the finisher should remember to prepare the polished surface sufficiently to give "tooth" for the adhesion of the paint. A very good method is to first carefully steelwool the surface; then clean either with a 2% solution of acetic acid or a reliable metal cleaner, and dry thoroughly.

Paint immediately after cleaning, either with insignia enamels (preferable) or with japan colors. As the blue seems to adhere the best, I have always painted the front of the blade one coat of blue from tip to 12-in. from tip, and the back of the blade the same for a distance of 24-in. After the blue is dry it is simple to apply the red and yellow bands, covering in one coat. After painting, all propellors must be balanced.

Navy Finish Codes

Finish coding on fabric surfaces are simple. First, all finish codes are located on the underside of all surfaces. Second, the only abbreviations used are: "AD" for acetate dope; "ND" for nitrate dope; "SPN" for semi-pigmented dope; "PA" for pigmented acetate dope; and, "PN" for pigmented nitrate dope.

As there is hardly any acetate dope used at the present time, most codes read: "ND4, PN2, 3-15-35," which means that four coats of clear nitrate and two coats of pigmented nitrate dope were applied on March 15, 1935. Note the commas between materials and date instead of the dashes used on Army Air Corps airplanes. All letters and numerals are the same: ½-in. letters and arabic figures. Also, where it is necessary at any time to refinish a fabric covered section, the original finish code is retained and the word "refinished," with the material and the date, is stenciled immediately following. For example, "ND4, PN2, 3-15-35, REFINISHED SPN2, 7-12-35" would mean the original finish was applied on March 15, 1935, but the section was refinished with two coats of semi-pigmented nitrate dope on July 12, 1935. Items are always separated by commas.

Strut numbering remains the same as heretofore noted, except the numbers are 1-in. instead of ½-in. in size.

The words "LIFT HERE" (instead of "lift") are also of 1-in. height at designated lift points.

(Part IV will follow in a later issue.)

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When you buy the Thor Model 2, you get your choice of over 10 different nozzle "set ups." You get a chart showing just the best nozzle for the type of material you spray at the air pressure you have. Perhaps this is why so many are turning to Binks. Investigate!

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Electrically Heated Paint Remover

One of our good customers desires information concerning a paint removing device that is heated by electricity. In the words of our customer, the new apparatus is supposed to take the place of the usual blow torch that is used for the removal of old paint from the sides of buildings, etc. We have never heard of this device and would appreciate it very much if you could tell us whether or not there is any such thing on the market.—F. M. N. Co.

Although we have done quite a bit of experimental work with an electrically-heated paint remover, we have never put anything of the kind on the market. The idea seems to have a little merit, but we have not seen enough in it to really push it.—GENERAL ELECTRIC CO.

We do not manufacture anything of this kind, nor could we refer you to a source of supply. If the customer has transformer equipment for very low voltage, we can make something of this character, but would not recommend the device for use on regular voltage. At best, it would be somewhat experimental.—STA-WARM ELECTRIC CO.

We have made such equipment which has been used for soldering purposes, and the nozzle has been comparatively small. If we were assured of orders being placed, we would be pleased to develop the apparatus on a larger scale, but we are not inclined at this time to develop anything on the possibility of its being used. We look upon this problem as being mainly of engineering. It is quite possible, and we shall be very pleased to develop the equipment to order. We have heated stills to 900°F. with hot air, and . . . we do not see any special difficulty.—HAROLD E. TRENT CO.

EDITOR'S NOTE: Has anyone something further to offer along this line—comments, suggestions, facts of value or interest?

Questions « Answers

Pressure-Feed or Gravity-Feed Spray?

We manufacture wood furniture and cabinet work for the Government, and are contemplating making a change in our finishing department, in so far as spray-gun equipment is concerned. It would be greatly appreciated if you would give us full information as to the different types of spray-gun equipment that would be the most practical for our line of work. Will you kindly advise us, whether in your opinion, gravity or pressure feed would be the most practical Any information you can give us will be very much appreciated.—P. D. Co.

Expenditures necessary for the two types of equipment differ considerably. The cost of the pressure type equipment is greater than the gravity-feed type. Although identical spray guns, air and material hose are used, the

Many a Wall - Flower Looks Good at a Distance

A few steps away she looks like a cool million . . . but her admirers are always conspicuous by their absence. No halitosis . . . no B. O. . . . and she wears good clothes . . . so what?

A close-up inspection reveals a poor finish . . . her theatrical make-up is atrocious, inappropriate, cheap. She is a wall-flower because of one fault . . . but a most obvious one . . . a displeasing finish.

For the same reason many a product is completely ignored by consumers who would otherwise be attracted to the point of purchasing.

Our creative studio is at your service in helping to improve the finish and the salability of your product. No charge to reputable firms. Write for details.

Rockford Varnish Co.

ROCKFORD, ILLINOIS

pressure type equipment requires additional air hose; also, the pressure material tanks cost more than gravity type containers . . .

The air supply and air pressure must be considered. The present air compressors may not be large enough to supply the greater demand of the pressure type equipment. Also, the air pipe-lines, which carry the supply of air from the storage tanks to its various outlets, may not be large enough to carry the greater volume of air needed with the pressure equipment. If such is the situation, additional financial outlay will be needed to provide an adequate supply of compressed air.

The type and uniformity of goods manufactured are factors to consider. Pressure type equipment is very desirable where the products are fairly uniform in size and shape, and where a steady flow of production can be maintained; also, work must be so arranged that one type of material can be sprayed in each booth, so as to overcome the necessity of too frequent changing of materials.

Although quick-release pressure valves, etc., are employed on pressure tank equipment, it is considerable more work to change materials while using pressure material tanks than when using gravity-feed containers.

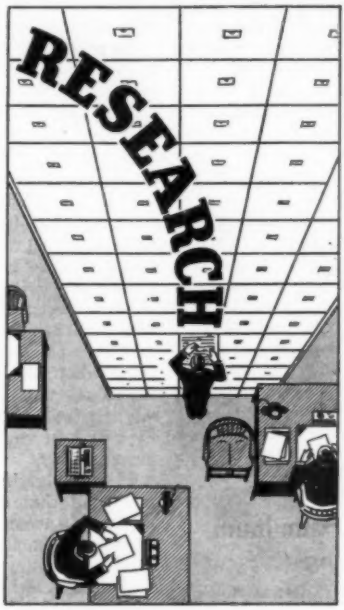
Materials of higher viscosity and of a higher percentage of solids can be used in pressure type equipment. As a result, you can build up a greater thickness of finishing material film with the same number of coatings, or the same thickness film with fewer coatings.

In the gravity-feed equipment, less uniformity of pressure of material at the spray gun nozzle is experienced. As material is used from the gravity container, the amount remaining in the container diminishes, and with less and less weight to produce the pressure that forces material to the spray gun, there is bound to be a lessening of the pressure on the material at the gun. This difference must be compensated for by the operator. This angle must be carefully checked, although it is passed over very lightly by the majority of those in authority.

I have personally observed men at work with pressure-tank equipment who positively could not resist tinkering with the adjustments, although knowing nothing whatever about them. Also, when material is forced to the spray gun, a certain technique is required in its correct application.

I appreciate the fact that pressure type equipment does not require elevation of containers above the spray-gun level to give proper working pressure to the material, as in gravity-feed type. This equipment hanging overhead has always been considered dangerous. Although metal hooks and sometimes wire core ropes are used in the tackle to hoist the bucket overhead, all too frequently the rope breaks or slips. I have had them fall when working with such equipment. I have seen operators drenched in lacquer from a gravity feed bucket that tilted, having caught on a valve in the air line.

At the moment of this writing, a salesman of finishing materials happened upon my retreat where I was preparing this article and, after learning the subject of it, advised that materials could be



A manufacturer who has made a good product and then is content to rest on his laurels is not, we think, a good manufacturer. Constant changes require constant study and research if one is to keep abreast of the times.

Egyptian is always striving to improve the quality of its product. We are ever busy developing new materials for changing styles of finish. We are continually working on new finishes.

Results are based on research and our large staff of research and experimental chemical engineers get these results. The findings of our work are passed on to the lacquer user in the form of a lacquer product perfected for a particular type of finish.

When you are next in the market for lacquers call on us for information, prices and other data that will help you in deciding what lacquer to use. Our representatives in all principal cities throughout the country are at your service. Just drop us a line and tell us you want to see the Egyptian man nearest you. He will call promptly and have something of interest to tell you.

EGYPTIAN · LACQUER

THE EGYPTIAN LACQUER MFG. CO. ● 90 WEST STREET, NEW YORK

very easily sprayed from the shipping containers (steel drums). I have been in various plants where this practice was carried out. Although I have never seen disastrous results from it, I must advise strongly against the practice —if for no other reasons than those set forth in INDUSTRIAL FINISHING from time to time . . . . they are sufficient and conclusive.

The foregoing is only a few of the high points to be considered. Fire hazards, insurance, maintenance of equipment, floor space required, efficiency of each type, preparing and cleaning of each type (as when changing materials, and when week-end lay-offs occur)—all these are factors to consider when re-equipping the plant.—GARRETT F. HUIZENGA.

Preparing Aluminum Castings

We manufacture dental equipment and in some of the pieces we use large aluminum castings. These castings are polished and enameled, but we find that we have trouble with the enamel cracking and peeling off the castings after they are in use a few months. No doubt, it is due to the porous condition of the aluminum castings. We would like to know how to prevent or avoid this peeling of the enamel. Is there some way the castings can be coated or treated before the enamel is put on. We will appreciate any information you can give us, or the name of any manufacturing concern that has had experience with this type of work. There is a good deal of water used in and around these castings and there is no question but what the castings absorb some of this moisture.—B. C. Mfg. Co.

EDITOR'S NOTE: A few of INDUSTRIAL FINISHING'S previously published answers to questions similar to the above are given here for review. Additional suggestions or facts will be welcome.

No. 1

I believe the best method of cleaning aluminum castings, so the finish will adhere tenaciously, is to use the sandblast. Smooth aluminum surfaces are of such character that an ordinary first coat of finishing material will not adhere to them satisfactorily, even when they are clean. The sandblast will leave the surface slightly etched and will aid the first coat in sticking to the metal permanently.

If sandblasting is impractical, about all that can be done is to thoroughly wash the castings with naphtha or some other solvent for grease, and dry them thoroughly with clean cloths.

In other instances it may be satisfactory to bake the castings for a short time at 400 or 500°F., just before finishing them, to burn off any oil or grease. It is not advisable to use caustic cleaning solutions with aluminum, because the metal is so easily attacked and dissolved by this chemical.

No. 2

For several years my method of cleaning aluminum castings has been to immerse them in a 20% solution of acetic acid until all oil and grease is removed or neutralized. Then rinse in a vat of clear hot water and allow castings to drain and dry. Do not wipe them. Spray or brush as soon as the moisture has disappeared. Eliminate all oil on the surface, use materials especially formulated

the
NEW

Paasche Convertible
High Production
Airbrush

Embodies every major improvement without sacrificing simplicity of design or operation. The New Paasche UBCH High Production Airbrush has everything! Greater speed; finer atomization; perfect coverage; convertibility; unmatched ease of handling; and by far the lowest maintenance costs. The few wearing parts (easily replaced) are built for extraordinary wear. . . . This airbrush development will give you more uninterrupted hours of faster production and finer results at less cost than any other. Write for technical reasons why.

Paasche Airbrush Co. 1917 DIVERSEY PARKWAY CHICAGO

THE WORLD'S HEADQUARTERS for manual and automatic airfinishing, aircoating, airrubbing, portable airpainting units, airfinishing booths and fireproof ventilating equipment.

for aluminum, and your troubles in this line will disappear.

No. 3

We have spent considerable time with various cleaning compounds that clean aluminum castings, and have finally adopted the following method as the most satisfactory:

Dip the castings for a few seconds into a boiling solution of trisodium phosphate and water (about 8-oz. to the gallon). Rinse immediately in clean boiling water. Lose no time in transferring the pieces from the cleaner to the clean boiling water. Then coat the castings as soon as possible after cooling, so the surface of the metal will not have time to acquire an invisible surface film that has a tendency to repel finishing materials. The length of time that the castings are left in the cleaning chemical has a great deal to do with the final finish. Too much time may cause the finish to lose its luster in a short time, while too short a time will not permit a thorough cleaning. A special type of enamel or paint must be used as a first coat on aluminum.

No. 4

If the washing solution does not thoroughly remove harmful impurities from the inner surfaces of the porous metal, there is bound to be trouble sooner or later. The metal will probably "take" the enamel and show a perfect finish for a short time, but at some later date the impurities will work to the surface and loosen the enamel, causing a defect in the finish.

Aluminum is an especially porous and "greasy" metal. It may be cleaned with an alkali solution or some other prepared solution. Extreme care is necessary, however, to make sure the solution has the proper amount of time to penetrate under the surface and remove the impurities, after which it is necessary to bake off the solution and dry the metal.

I have found, by experiment, that the best and most economical way to clean and prepare aluminum, to make sure it will cause no further trouble, is to place the cleaned castings in an electric oven and bake them at a temperature of 500°F. for two hours. This baking draws all the impurities from the inner surfaces to the outer surface and removes any oil or grease that may be present. After the castings have been baked and cooled, the impurities which remain on the surface can be removed by sanding the castings with No. 0 garnet finishing sandpaper. As a result of using this method, our enameled aluminum castings stand up in service and we have no complaints concerning the finish.

Air Heater Bulletin

A new bulletin of 16 pages, 8½x11-in., illustrates and describes, in a very interesting and informative way, several types of Ross heaters for finish ovens, dryers, and air-conditioning equipment. Copies are available to readers of INDUSTRIAL FINISHING. Write J. O. Ross Engineering Corp., 350 Madison Ave., New York, N. Y.

How Quickly Sprinkler Heads Release Water

The remarkable efficiency of the sprinkler head as a fire extinguishing device is recorded for the first time in high speed movie shots—1/10 of a second after the heat struck the solder, water deluged downward in sufficient quantities to extinguish the fire. A 37-year record of the National Fire Protection Association indicates that in 65,900 fires, sprinklers of various types extinguished or controlled the fire in 96% of the cases. Views show a solder-link melting and releasing water on fire at the rate of 45 gallons a minute.—Rockwood Sprinkler Co., Worcester, Mass.

convince *yourself!*

We believe there are *many* products in our line, superior to *any* other on the market and would like to prove it to *you* at *our* expense. . . . Let us submit free working samples of a few *exceptional* items.

No. 1000 (licensed) GLOSS LACQUER.....(Heavy body—water white)
No. 2000 (licensed) FLAT LACQUER.....(Real rubbed satin finish)
No. 3500 SEALER.....(Quick drying—easy sanding)
No. 1900 WATEROIL RUBBING OIL.....(Eliminates haze or bloom)
WATEROIL STAINS.....(Acknowledged leader in stains)
DOLCO FILLERS.....(Quick drying, *real* fillers)
LIGHT-FAST SHADING STAINS.....(Eliminate fading, blend perfectly)

You will be amazed at the unusual merits of all these items.

V. J. DOLAN & COMPANY, Inc.
1830-32 NORTH LARAMIE AVENUE CHICAGO, ILL.
"Unquestionable Quality" *Wood Finishing Supplies*

Yesterday—
"Wood Lacquers"

TODAY—
3697 SUPER
WOOD FINISH

A GRAND PIANO is not comparable with a midget radio. Neither is 3697 with "wood lacquers" of the usual type, made to sell at minimum prices. If the best is none too good for your product, remember 3697 only costs a trifle more. This trifle, however, permits us to use ingredients of surpassing qualities.

3697 has optimum resistance to graying, checking, cracking and scaling. It dries rapidly, recoats rapidly, but hangs on grimly to the wood.

At its best, wood is a treacherous surface for finish. We expect 3697 to be used on the best wood, carefully prepared. Try humidity and temperature-change tests on it. Test it for toughness. Notice the enduring brilliance of the finish.

For the most critical—3697.

The
VARNISH PRODUCTS CO.
5208 HARVARD AVENUE, CLEVELAND, OHIO

What's New « «

New Plasticizing and Solvent Oil

The Neville Co., Neville Island P. O., Pittsburgh, Pa., announces a new product, "Nevinol," (an inert, viscous, high-boiling liquid of light straw color) which is highly useful in the formulation of synthetic finishes, rubber coatings and pyroxylin lacquers. A data sheet describing the new product is now available for distribution.

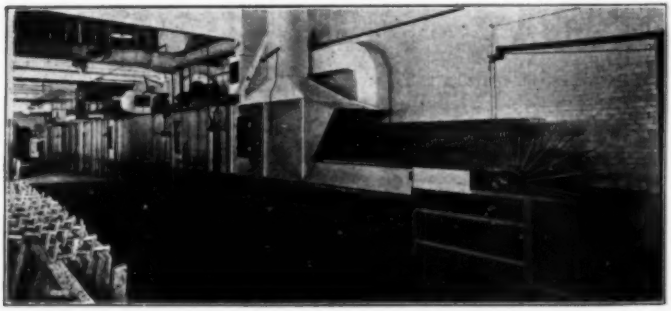
Metal Decorating Oven

One of the latest finish-drying machines announced by the J. O. Ross Engineering Corp., 350 Madison Ave., New York, N. Y., is the Ross Metal Decorating Oven, one view of which appears in the accompanying illustration. It is a conveyor oven through which freshly finished parts are passed to bake the finish according to whatever time and temperature schedule is desired.

The source of heat is a Ross-Harrison air heater of either the direct type, in which products of combustion pass into the oven, or indirect type, in which only clean, fresh air enters the oven. Gas or oil burners may be placed on the floor alongside the oven, or on a platform above the oven. Heaters and burners are provided with all the necessary safety devices . . . The oven is divided into several controlled zones, the number depending on its length, each zone being provided with its individual circulating fan, thermostatic control and distributing duct work. A hood at the loading end prevents the escape of volatiles and hot air into the room. At the end of the hot zone, a cooling section is provided.

For Washing Painted Surfaces

Murphy's Sudzrite System, manufactured by The Phoenix Oil Co., 2534 W. 5th St., S. W., Cleveland, Ohio, represents an economical way of using regular or special soaps for maintenance cleaning of all painted surfaces—particularly railway and street cars, trucks, buses and automobiles; also, interior surfaces and various finished products. A simple means is



An interesting perspective view of the oven from its unloading end, showing zone circulating fans, cooling zone hood, "cold air" fan to cooling nozzles, and conveyor.

AMAZING DURABILITY

Larcoloid dries in ONE hour!

SPRAY or BRUSH

From Hair Pins to Stream Lined Trains

Yes Sir!

LARCOLOID is made, special, for numerous products and surfaces.

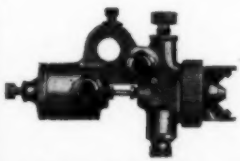
Whether you want a finish for paper, masonite, brass, chrome plated surface, copper, wood or steel and where speed and quality are essential, Larcoloid is the answer—any luster—air dry or bake.

Tell us what you are finishing and we'll send you a sample.

Larkin Co Inc. PAINT DIV., Buffalo, N. Y.

Manufacturers of Enamels, Varnishes, Japans, Lacquers.

SPRACO PRODUCTS



Spraco Pneumatic Spray Head

Spraco Pneumatic Spray Heads have been particularly designed for automatic spray finishing operations. Accurate control provided for both volume and shape of spray. Patented needle valve construction guarantees positive operation and insures long life with no leakage. A compact, rugged, dependable spraying unit. Write for Bulletin No. I-178.

SPRAY ENGINEERING COMPANY

INDUSTRIAL FINISHING ENGINEERS

116 Central St. **Somerville, Mass.**

provided to produce, inside a drum, soap suds solutions which are uniform as to the amount of soap per gallon of water. The system can be regulated to deliver thin or mild mixtures for easy cleaning, or heavy or rich mixtures for more difficult cleaning. Any degree of richness can be provided. This system is recommended where a large amount of very particular cleaning work is to be performed effectively and at low cost.

Production Airbrush

Certain important merits of the new Paasche UBCH high-production airbrush, according to information released by Paasche, include:

1) High production speed without sacrifice of fineness of finish or atomization.

2) Economy of operation and adaptability to new materials and conditions.

3) Easily handled because of its perfection of balance and the instant response of its trigger.

4) Long continuous service . . . . made to stay in order and on the job.

5) Almost 100% immune from accidental breakage because all vital working parts are incased.

6) Complete convertibility . . . user has choice of wide variety of spray nozzles; gravity, syphon, or pressure feed can be used; air hose can be attached to back of barrel or bottom of handle; fits itself to the individual requirements of the user.

7) Adjustable fluid lock permits operator to easily and quickly adjust flow of material to any degree of coverage desired, from the lightest coat to the heaviest.

8) Designed to meet practical requirements . . . after the manufacturer made nation-wide survey to find out what features are most desired.

An interesting bulletin (H6-35), illustrating and describing this remarkable airbrush, will be sent upon request. Write Paasche Airbrush Co., 1917 Diversey Parkway, Chicago, Ill.

Paint Regulator

Binks Mfg. Co., 3114 Carroll Ave., Chicago, Ill., have originated and perfected what is known as the 47A Material Regulator which permits very accurate control over paint consumption in spray painting systems. The regulator is practical and a great money saver in plants using 25 or more gallons of paint daily.

Individual regulators are installed at each point on the pipe line where a tap is taken off for a spray gun. The regulator can be set by the paint superintendent with a removable key determining precisely the amount of paint each gun will receive regardless of how many or how few guns are operating. Paint viscosity, once determined, can be rigidly adhered to without the possibility of interference on the part of past operators who have been in the habit of adding thinner to suit their own convenience.

The regulator is of all metal construction, and is therefore not affected by solvents. It will not clog up, will not strain out pigment, and will operate indefinitely without resetting.

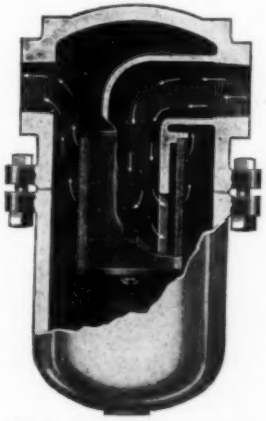
"Triple Life" (Paint Protector)

The Franklin Research Co., 5134 Lancaster Ave., Philadelphia, Pa., announces a transparent surface coating that is highly resistant to the elements — for use on any surface such as paint (interior or exterior), varnish, lacquer, metal, etc., that tends to oxidize, fade, become dull, or tarnish when exposed to the atmosphere. Triple Life is a scientifically compounded liquid which dries rapidly, leaving a very thin lustrous film

that prolongs the fresh appearance of a finished surface over a number of years. Tests show that the use of this material on brass, copper and bronze will make an ordinary polish job last five to ten times as long. It may be applied by spray gun, soft cloth or lamb's wool applicator.

Separator Frees Air of Oil and Water

A new type of separator that will remove water and oil from either steam or air has recently been developed by The Johnson Corp., of Three Rivers, Mich. This new unit,



Sectional view of Gast separator.

known as Type "S" Gast Separator, utilizes the Gast patented principle of zig-zagging the moisture and oil-laden vapor through several layers of coarse mesh screen, which produces the same effect as thousands of tiny baffles.

It is claimed that the large effective area of the screen, plus the space between the parts and the screen, permits the separator to func-

"THE ACE OF CLEAR METAL LACQUERS"

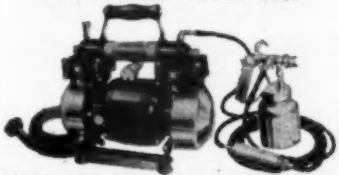
1617

YOUR FINISH

Sealed against the elements!
Crystal Clear
Hard and Enduring
Perfect and Lasting Color
Stops Spotting Out

THE STANLEY CHEMICAL COMPANY
East Berlin, Conn.
Lacquers—Synthetics—Enamels—Japans
A subsidiary of
The Stanley Works, New Britain, Conn.

CROWN
AIRFLO
Portable Spray Painting Unit
OPERATES WITHOUT OIL
CUTS UPKEEP COSTS 50%



Ideal for the small manufacturer. No Crankcase—no oil-laden air. Operates with oil-less bearings guaranteed 25 years. Delivers more pressure—more volume per motor horsepower. Fewest moving parts. G-E motor, blower-cooled. Extremely portable. ¼,1/3 and ½ H.P. Priced from $74.50. Write for full details.

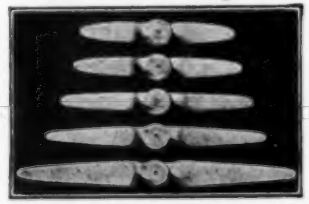
CROWN SPRAY GUN MFG. CO.
1218 Venice Blvd. Los Angeles, Calif.
Warehouses in Principal Cities

"MAGIC" TACK RAGS
IMPROVE YOUR FINISH 100%

MAGIC TACK RAGS remove specks, lint and sand particles--- bring out that deep, smooth luster, produce a faultless surface for white or colored finish. Why use "home made" tack rags when you can buy MAGIC TACK RAGS at trifling cost! They are tackier, do not dry--- are dust-proof and spontaneous combustion proof. Packed in dozen and gross lots or more. Made only by the

Wm. A. Juergens Co.
4036-40 Lagrange Street,
Toledo, Ohio, U. S. A.
If your dealer does not carry Magic Tack Rags, write us for sample.

Aeroplane Type Exhaust Fan Propellors



16-in. (requires	⅛ hp. motor at 1725 rpm.)	$4.00
18-in. (requires	⅛ hp. motor at 1725 rpm.)	4.50
20-in. (requires	⅛ hp. motor at 1725 rpm.)	5.00
24-in. (requires	¼ hp. motor at 1725 rpm.)	6.00
28-in. (requires	¼ hp. motor at 1725 rpm.)	7.00
30-in. (requires	½ hp. motor at 1725 rpm.)	8.00
36-in. (requires	¾ hp. motor at 1725 rpm.)	12.00

Made of Nickel Alloy Aluminum
Machined — Finished — Balanced

Guaranteed in every respect.

Send for descriptive circular and new low price on Complete Fans or parts to make any size exhaust or ventilating fan.

UNIVERSAL MFG. CO.
324 W. 10th St. Indianapolis, Ind.

tion as a strainer for long periods without cleaning . . . designed for pressures up to 150-lbs.; may be permanently installed in the line; interior parts can be removed without disturbing inlet and outlet connections; built in sizes from ⅜ to 2-in.

Vibratory Screen

The Paterson vibratory screen, illustrated here, has two important features: adjustability of the vibration to suit the material, and a simple method of holding the cloths and permitting their quick replacement. This screen is of the type which has a vibrator element supported in an inverted, U-shaped metal frame. The sieve basket fits into a quick-set clamp at the bottom of this frame. . . . usually suspended when in opera-

Height over all	32-in.
Sieve baskets diameter	18-in.
Throw of vibration	0 to 3/16-in.
Vibrations	1100 to 1200 per min.
Weight	75-lbs.
Motor	½-h.p.

tion. Vibratory motion is obtained through the use of a motor-driven unbalanced weight . . . . controlled by adjusting the position of the weight. By turning a small screw it may be exactly adjusted to the particular requirements of the material being screened. The motor is hermetically sealed in a dust-and-explosion-proof hood, and operates on any lighting circuit.

This equipment is distributed by Arthur T. Ward, 50 Church St., New York, N. Y.

Repairs Chipped Porcelain

An instant-hardening filler cement for repairing cracked or damaged surfaces on various porcelain finished products and appliances is announced by the Vitrowhite Co., 1456 Thome Ave., Chicago, Ill. Vit-Re-Pair is put up in convenient tubes; is easy to apply, lustrous and permanent; is supplied in several shades of white, black and special colors.

Cleans Metal by "Rotoblast"

The Pangborn Corporation, Hagerstown, Md., announces a new blast-cleaning machine adaptable to all types of work; it entirely eliminates the need for compressed air as the abrasive driving agent. Instead, a rapidly spinning wheel securely journaled in extra large ball bearings, propels the abrasive by controlled centrifugal force. It is this feature that gives the new unit its name, "Rotoblast."

The new Rotoblast is the result of this prolonged study. It is claimed that it meets today's industrial demand for lower costs and improved blast cleaning production performances. Compact in design and adaptable in performance, it is recommended for use with barrel blasts, table

1905 Strand 1935

POWER WOOD FILLER RUBBING MACHINES

Bring your filler rubbing up to modern methods. Do away with rags, excelsior, seagrass and etc. Save your filler and do a perfect job with felt pads crossing the grain.

Many plants are doing it.

Write

N. A. STRAND & CO.

5001 N. LINCOLN ST. CHICAGO

MASKING TAPES

like Permacel, Jonflex and Industrial give you speedier jobs because they stick in any weather. Their precision edges give perfect color separation. They come off clean.

PERMACEL
Paper masking tape with unusual adhesiveness.

JONFLEX
Finely-woven cloth tape extremely flexible and easy to use.

INDUSTRIAL
Heavier, coarser-woven tape for those who prefer this type.

THE REVOLITE CORP.
A Subsidiary of Johnson & Johnson
NEW BRUNSWICK, N. J., U. S. A.

blasts, special cabinets and similar equipment.

Loads of castings weighing 1800-lbs. have been thoroughly cleaned after eight minutes of blasting. Eighteen cubic feet loads of gray iron, malleable and steel castings, forgings, stampings and heat treated parts have been thoroughly cleaned in from 8 to 15 minutes. Low maintenance is assured because all parts exposed to blast action are of abrasive-resisting material and of extra heavy construction.

A very attractive new Catalog No. 200, with full description and illustrations is now available, and will be mailed promptly upon request.

How the Finish Sells Products

A new booklet on the use of Dulux as a finish for refrigerator cabinets, and other household products, is now being distributed by the Finishes Division of the du Pont Company. Included in the booklet is a summary of opinion from 99 electric appliance dealers, 85 of whom said they found customers were influenced in buying by . . . the finish . . . The booklet also carries results of several severe tests under varying conditions and along a number of lines, showing the merits of Dulux as a finish.

PURITAN SILVER PASTE

The original Silver Paste, not synthetic and not made from Aluminum Bronze Powder. Is produced through an entirely new principal of manufacture. For Casket, Hardware, Toy, Wood, Metal and Auto Industries. Extreme fineness, Brilliancy. For spraying, dipping or brushing. Sold by Otto A. Both Corp., 50 Hartford Street, Boston, Massachusetts.—Adv.

. . "top quality" paint & varnish thinner
. . excellent for use in spraying, brushing and dipping.
SUN OIL CO.
Philadelphia, Pa.
SUNOCO
Spirits

News of Inventions

Inventions Digest, Inc., 310 S. Michigan Ave., Chicago, Ill., serves manufacturers by furnishing them with latest information concerning American and foreign inventions. In this era when inventions are more revolutionary than ever before, and the possibility of obsolescence more imminent, American manufacturers can keep themselves fully abreast of all progress wherever it originates and maintain more readily the industrial supremacy so essential to national welfare.

Swann Chemical Co. Renamed Monsanto Chem. Co. of Ala.

The name of the Swann Chemical Co., Monsanto subsidiary, with plant at Anniston, Ala., has been changed to the Monsanto Chemical Co. of Alabama. Administrative and sales offices of the Alabama subsidiary, together with those of another former Swann property, the Provident Chemical Co., St. Louis, have been moved to Monsanto's new Administration Building in St. Louis. Sales offices of a third former Swann company, Wilckes, Martin, Wilckes Co., Camden, N. J., have been consolidated with Monsanto's New York office. A new sales division, the Swann Products Division, has been created to handle the sales of all products of the former Swann companies. Henceforth these products will be sold under Monsanto's name. District sales offices are retained at Birmingham.

Ford Industrial Engines

We are advised by the marine motor department of Oscar Smith & Sons Co., Clearfield & C. Sts., Philadelphia, Pa., that conversion parts for Ford Model A and Model V 8 motors are available for use as industrial motors. Such units comprise positive pressure pumps, brackets, water-cooled manifolds, etc., and have been found adaptable for industrial installations where fire hazards are factors to be dealt with. These units, when converted, deliver a maximum of 40-h.p. at 2200-r.p.m. for the Model A Ford, and 90-h.p. at 3800-r.p.m. for the V 8 Ford. They have been found very satisfactory for power drives, oil pump drives, generator drives, etc.

Letters from I. F. Readers

(Continued from page 7)

Tile Finish

In making imitation tile from plaster, I want to know what I can use to finish off the tile to make it look like a baked enamel job (or a nice smooth surface) and yet not go through the baking process — something that will not check, crack or peel, and yet give a high lustrous finish . . . and which acids or strong soaps will not touch . . . something that is permanent. My tile will be colored, so I do not need a colored material; it can be clear or colored. —M. Smith.

Paint Test Panels

On page 6 of the June issue . . . we notice that one of your advertisers is looking for poplar paint-testing panels. We would like to be placed in touch with them. — Babare Mfg. Co., 11th & Hylebos, Tacoma, Wash.

Cane Shavings Wanted

We are in the market for a quantity of cane shavings, and would appreciate it very much if you could put us in touch with a source of supply. Kindly send list of manufacturers . . . —C. E. T. (Novelty Juvenile, Outdoor Furniture).

Swedish Wood Filler

Kindly send us the address of the manufacturers of "Swedish Wood Filler."—S. T. M. Co. (Metallic Burial Caskets).

EDITOR'S NOTE: We'd like information on this, too.

Aluminum Powders

In addition to the information requested in our previous letter, we would be very glad if you would also give us the names and addresses of a few American manufacturers of aluminum powders. The aluminum powders required are those used for metallic car finishes, and should be of the finest quality.—British Glasurit, Ltd., Church Wharf, Chiswick Mall, London, W. 4, ENGLAND.

MARVELOUS NEW PAINT SPRAY GUN

Handles all types paint, lacquer, etc., especially the new synthetic enamels. Lighter in weight, widest spray, perfect atomization; air purifiers, 5 and 10 gallon pressure outfits, accessories, etc.

Write for Catalog.

The Alexander Milburn Company 1402 W. Baltimore St. Baltimore - Maryland

The most efficient compressor in its size — *regardless of price*

This improved AIR-O-MATIC develops 3 cubic feet of free air and will operate any low pressure gun continuously.

Storage Tank 10 x 20-in.; Weight 85 lbs. Easy to handle. Will maintain maximum pressure of 50 to 70 lbs.

This is a well built, thoroughly reliable compressor which has been made and sold for over six years. Write today for price and full details.

UNIVERSAL MFG. CO.

324 W. 10th St. Indianapolis, Ind.

$130.00 Cleaning Cost Cut to $23.98 and Wiping Eliminated!

SEND FOR MAGNUSOL FOLDER

A large mid-western manufacturer was faced with a material cost of $130.00 per hundred gallons of solution, cleaning steel before japanning. Now, using MAGNUSOL, this solution cost has been reduced to exactly $23.98!

In addition to this saving in actual money, MAGNUSOL *cleaned more metal—cleaned faster and more thoroughly*. MAGNUSOL also *eliminated wiping* on this operation.

Investigate the value of this remarkable new Magnus metal cleaner.

MAGNUS CHEMICAL COMPANY
49 South Avenue Garwood, N. J.

Magnus
CHEMICAL COMPANY

FOR
Finer Finishes
AT A SAVING
Benjamin Franklin
Paint & Varnish Co.
1600 LAMBERTON STREET
PHILADELPHIA, PA.

Graining; Marbleizing

We have an inquiry from one of our customers in Burmuda for an illustrated book on how to do graining and marble work, and would appreciate it if you would advise us of the best book for this purpose.—H. Varnish & Color Co.

Sandpaper Holder

We notice, on page 59 of May issue, mention of a new hand block or holder for sandpaper, this being made of two pieces of metal clamped together. Will you tell us the name of the manufacturer of this part, or the particulars of same? We wish to purchase one or more of these fittings.—B. E. N. Patents, Ltd., Gorst Road, Park Royal, London, N. W. 10, ENGLAND.

To Prolong Finish on Polished Bronze

We have been receiving INDUSTRIAL FINISHING, and find it very interesting—so much so in fact, that we are going to ask you to help us.

We manufacture cast bronze and sheet brass signs and name plates. We have been spraying these plates with various lacquers and varnishes in an endeavor to obtain a coat that we can apply to the polished metal, so the polish will not be dulled by the passage of time.

It has been our experience that the best of materials we have been using have a life of only six months when exposed to the elements.

If you were in my shoes what would you do? If you wish to send copies of this letter to your advertisers you may do so, and we promise to thoroughly test any samples they send to us, and will follow their instructions or directions when finishing the test panels.

Our method of testing new materials is to finish a sheet of brass ready for the lacquering. It is cut in half; one-half is coated with our standard material which we are seeking to better, and the other half is coated with the material under test.

One-half of each of the sample panels is covered with a foil, having the edges glued down so that only half of the test panels are exposed to the elements. At the expiration of six months the foil is removed, so we can judge the amount of deterioration that has taken place.—H. T. & Sons.

EDITOR'S NOTE: A material called

"Triple Life" is said to produce the results desired, see the "What's New" section of this issue.

Head and Eye Protective Devices Described

A new catalog of 20 pages 8½x11-in., just released by the Chicago Eye Shield Co., 2300 Warren Blvd., Chicago, Ill., describes and illustrates the company's various types of goggles, masks, helmets, and protective shields for the protection of workmen employed on more or less hazardous work in industry.

Spray Equipment Catalog

The DeVilbiss Co., Toledo, Ohio, announces a new catalog, the "SF," covering the DeVilbiss line of specialty equipment—portable air-compressing units, spray guns and accessories for the light duty application of paints, lacquers, and other protective coatings, insecticides, motor car lubricating and washing, air brushes, and many other items in the extensive line of DeVilbiss specialty equipment.

Those who have been using the Catalog "SE" should not fail to replace it with one of the new catalogs, as several changes of major importance have been made and listed.

Kitchen Sink in Colors

A cabinet sink in color, seen at the New York Housefurnishings Show is the latest thing in kitchen equipment. It is finished in an enamel made on a synthetic resin base, which looks like porcelain but does not chip even under the blows of a hammer. Noiseproof qualities, due to rubber insulation, and provision for ventilation of the garbage container section and for escape of steam, are other qualities of interest. Single or double drain board types are to be had, either in a design of extreme simplicity or in a newer model with ornamental grill work and paneling.—DUPONT STYLE SERVICE.

More "Tack Rag" Finishing

Since the development of scientifically-made tack rags for large automobile companies in connection with the wider use of synthetic enamels, a number of other manufacturers have found the tack rag an essential factor in finishing their products.

The tack rag is by no means a new "tool" for the industrial finisher. Old timers in the industry have used home-made tack rags for years in cleaning surfaces before the application of enamels, paints and varnishes. Home-made tack rags, however, could only be used only for a day or so before they hardened and lost their "tack"; they also were susceptible to spontaneous combustion—a constant fire hazard.

Magic Tack Rags, made by the Wm. A. Juergens Co., 4036-40 La-Grange St., Toledo, Ohio, are impregnated with a scientific solution that will not dry hard, that retains the tacky surface indefinitely and is spontaneous combustion proof. They are made in two sizes, and packed in dozens and gross lots, each tack rag in a glassine envelope.

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222 East Ohio St., Indianapolis, Ind.
Telephone ..... Riley 6771

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EDITORIAL

Effective Colors to be More Popular on Products

Motion picture productions have a powerful and widespread influence upon the general public. Sitting quietly in a semi-darkened theatre, people are in a highly receptive state while they view entertainment presented on the silver screen. This fall and winter a number of important releases will be in vastly improved Technicolor. Pre-vues of some of these color pictures reveal strikingly beautiful true-color effects. They're sure to make a hit. As a result people are going to become more color conscious, more color minded. Attractive colors and pleasing color combinations are going to be more in demand for all products that the public buys or uses. Progressive manufacturers of such products will do well to study this trend closely and be prepared to offer what's going to sell so readily in the future.

Cleaning Job Saved on Pressed Metal Finishing

Every manufacturer of products formed by stamping, punching or pressing sheet metal will be interested in learning that a forming lubricant can be used which doesn't need to be cleaned off before finish coatings are applied. Here's a typical inquiry for something of the kind:

"We face a problem which up to this time we have been unsuccessful in solving. We will be glad to have the benefit of your experience and any recommendations which you may be in a position to make that may lead to the solution of our difficulty.

"On certain very mild forming operations on light gauge sheet steel, principally 26 and 28 gauge, it is necessary that a slight quantity of mild lubricant be used. The problem is to find or develop that lubricating medium which will lend itself to enameling and baking without interfering in any way with adhesion or appearance of the baked enamel finish.

"Costs will not permit of any degreasing or cleaning operation. With partial success we have used a weak emulsion of soluble oil and water (10% oil). This lubricates the forming die satisfactorily. However, there is sufficient residue of such a nature that it leaves a fine blistered, or pimply effect on the baked enamel. We would

like to add, however, that it does not seem to interfere in any way with the adhesion of the enamel."

Inquiry uncovers the fact that materials are available and are being used for this purpose. Those named include Super Soluble oil, Sohio coating, and Paralin (names of suppliers on request). One large concern uses Super Soluble oil mixed one part of oil with 25 to 30 parts of water and, to quote our informant, "in performance it evaporates, leaves no residue and does not soften." Of course, the metal is thoroughly clean before the lubricants are used — before the forming or stamping operations are performed.

Fireproofing Wood

Making wood fireproof, or even fire-resistant, is no simple matter. From what we can learn it is too much of an involved and expensive process for the average user of lumber to attempt. A concern in New York City will treat your lumber by a patented process to make it fire-resistant, or will sell you "Flaimpruf" lumber. The U. S. Forest Products Laboratory of Madison, Wisc., has considerable information on file for making lumber or wood products fireproof or fire-resistant.

But do you really need your wood fireproofed? Most products made of wood are coated with some kind of finish, and if that finish is flameproof or burn proof or highly fire-resistant, that is usually enough safety for practical purposes. Finish coatings of various kinds can be obtained which are fire-resistant and which meet certain requirements of the fire underwriters. INDUSTRIAL FINISHING will be glad to supply names of manufacturers of such coatings.

Wood Furniture to be Improved or . . . .?

Manufacturers of wood furniture use tremendous quantities of finishing materials, equipment and supplies, but they're not going to use nearly so much per year in the future if they do not improve the design, construction, production and merchandising of their goods. Metal furniture manufacturers are making progress because their products and their methods are modernized in the four features just pointed out—and more improvements continue apace. For example, in a current issue of a welding magazine we read:

"Metal furniture has taken a definite place in business and industry. What is of particular significance is the steadily growing place metal furniture is finding in the home. As people learn what comfort, beauty, and durability there can be in well-designed metal furniture there is noticeable an ever increasing demand for this type.

"The obvious way to fabricate such furniture is by means of welding. Comfort, so important in house furnishings of this kind, is a natural result of the use of welded fabrication. Design to give maximum comfort can often be carried out only if welding is used.

"Beauty, frequently as important a consideration as comfort, is enhanced if all the joints are invisible. If welded, the joint loses its identity and cannot be found when the metal is polished, painted, or otherwise finished. Ugly joints, fittings and bulk are all eliminated and strength is improved.

"Durability, of equal importance, is certainly increased . . . ."

Why hasn't more wood furniture invisible joints, rounded corners, more uniform figure and finish, greater stability, and less of

that cheap looking but expensively gaudy ornamentation? And why do wood furniture manufacturers bring out new designs so many times a year to be exhibited in expensive shows from which the public is barred? And why do the majority of furniture manufacturers permit their identity to be kept a secret from the ultimate buyer and user?

Who would buy an automobile, or radio, or electric refrigerator, or typewriter, without knowing the name of the manufacturer?

Walnut Continues as the Favorite for Wood Furniture

Walnut leads all other woods as a face wood for dining room and bedroom furniture by a comfortable margin. A survey of the 1935 Summer Furniture Markets showed walnut at the head of a list of 40 different face woods. Walnut's percentage of the total is 36%. Mahogany comes next with 20¾%; maple 8½%; oak 5½%. Mahogany leads oak only in American Colonial and English style suites. Maple leads both woods in Early American style furniture.

Painted furniture (3%) was included in the survey of 3,451 suites of furniture exhibited in Chicago and Grand Rapids.

How to Order Goods so Mistakes are Avoided

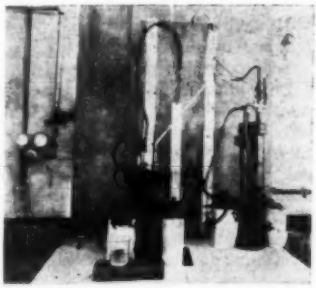
Getting exactly what you want when you order by mail, or being sure you supply your customer just what he wants under similar conditions, is of utmost importance in all industrial buying and selling. A limited survey of this problem conducted by the Policyholders Service Bureau of the Metropolitan Life Insurance Co. revealed that a number of manufacturers employ standardized methods of guarding against insufficient or misleading information on orders. The survey also revealed that the problem occurred rather widely in industry. Because of this indicated interest, the results of the brief investigation have been made generally available in a report entitled, "How Equipment Manufacturers Provide Against Inadequate Specifications in Customers' Orders." Copies are available on request to the Policyholders Service Bureau, Metropolitan Life Insurance Co., 1 Madison Ave., New York City.

Mixers, Agitators, Separators Shown in Booklets

Power mixers, agitators, separators and other equipment for handling finishing and cleaning liquids are illustrated and described, with specifications, in new 8½x11-in. bulletins released by The Patterson Foundry & Machine Co., East Liverpool, Ohio.

Shows How Deep Liquids Will Go Into Woods

TESTS on woods to determine the penetration of liquids, which will be of interest and value to painters and wood finishers, may now be carried on by the Forest Products Laboratories in Canada, through the development



An instrument for investigating the porosity of wood obtains information on the penetration of preservatives into many kinds of woods.

of a special apparatus. Liquids can be forced through wood samples under controlled experimental conditions in this device.

Metal cylinders are used for holding liquids at various pressures and this liquid is transmitted to the wood specimen which is held in a clamp above a glass receptacle. A tank of compressed air is connected to the supply cylinders by a pipe leading from a reducing gauge, so that the pressure may be readily increased or reduced.—A. P. CHILD.

High-Gloss Without Polishing

ONE MAKER of finishing materials is now marketing a fast-drying finish designed for use on sheet metal and making unnecessary the so-called "mist coat" and polishing operations so generally required to produce a high gloss on lacquered surfaces. This finish is said to contain the synthetic gum "rezyl," which is one

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ingredient of the extremely durable and weather-resistant finishes now quite generally employed.

It is especially suited for finishing fenders, splash aprons and similar automobile parts, where colors have displaced black baking japans to a large extent, the new processes involving lacquering and requiring much time and expense in mist-coating and polishing.

The new finish is sprayed on over primers which have been baked at temperatures of not less than 225 to 250°F., and have been sanded smooth. One or two double cross-sprayed coats are applied, with a 15-minute drying period between coats; then air-dried for 90 minutes or force-dried for 20 minutes at 100°F. The finished surface is either wet-sanded or dry-sanded to remove dust and any minute imperfections. If wet-sanded, the water must be dried off before the final operation, which is a 45-minute bake at 250°F. This bake causes the finish to semi-fuse and flow together, removing all scratches resulting from the sanding, and leaving a high luster without any polishing. —C. F. SCRIBNER.

Decorative Colors on Stainless Steel

WITH increasing use of chromium alloys has come a realization of the additional artistic effectiveness of the use of color in conjunction with the natural bright finish. This newest trend, already noticeable in the public taste, has led to the development of several methods of surface coloring and treatment on stainless steel.

Three of the methods are enameling processes. The first requires a high temperature, a colored vitreous enamel being fused on the metal. The second is a medium temperature operation in which the coloring is applied as a liquid and baked in place. Areas that are to retain the natural stainless steel luster are polished after these two treatments. The third consists in coating the steel with shellac and applying a brush lacquer over it. The shellac insures good bonding of the lacquer.

Sandblasting and etching are also used to produce decorative effects. A more recent development is a method of etching in colors. All color shades are possible.

Chemical darkening also is used when it is desired to vary the reflectance of stainless steel. This procedure permits the production of any shade from natural bright metal to jet black.—ELECTROMET REVIEW.

Finishers' and Decorators' Materials and Supplies

What to use and where to buy it are answered in new booklets listing a tremendous variety of materials and supplies for finishers, refinishers, and decorators . . . now ready for distribution by H. Behlen & Bro., 10 Christopher St., New York, N. Y.

Technical Books Cheaper

The high price of most technical books has prevented many chemists and other technicians from building up home libraries of technical books. To fill this need, the Chemical Publishing Co. of N. Y., Inc., has recently made arrangements whereby it can offer certain standard works at 25 to 75% below publisher's prices. In order to take care of this business, additional space has been taken at 175 Fifth Ave., New York City. A newly published catalog of technical books is now ready for free distribution.

New Gum & Chemical Company

The Lakr-Old Gum & Chemical Co. announces to the trade that it has started in business with offices at 20 W. 22d St., New York City, where it will carry on a general business devoted to the buying and selling of all surplus merchandise such as gums, chemicals and allied products.

Clinton Company News

R. J. Hazucha, formerly connected with the Ault & Wiborg Corporation as well as the Maas & Waldstein Co. and for many years identified with the plating and finishing industry, has joined the selling organization of The Clinton Co., 167 N. May St., Chicago, Ill., manufacturer of quality industrial finishes and specialties.

New Furniture Pictured in Room Scenes

Opening of a permanent studio, equipped with room backgrounds designed for photographing furniture in model room scenes, and located at the American Furniture Mart, home of the Chicago furniture shows, is announced by Grignon Studio, commercial photographers. Photographs of furniture in room settings attract more public interest, and thereby help to sell good furniture.

Industrial Materials Exhibit

The Third Annual Industrial Materials Exhibit will be held in the Hotel Astor, New York, N. Y., October 21 to 25. More than 40 manufacturers of industrial materials will participate in the exhibit. Tickets of admission may be obtained from any of the participating manufacturers.

Linzer Brush Catalog

David Linzer & Sons, Inc., brush manufacturers, 10 Astor Place, New York, N. Y., announce publication of a new 64-page illustrated catalogue, which is now ready for distribution to the trade. In addition to a comprehensive assortment of brushes of all kinds, the new catalogue contains for the first time the patented "Pre-Treated" paint brushes . . . also another new development—a new type of binding called "Compo-Fibre," which permits the construction of a brush without the use of any metal. Brushes with this new binding will not conduct electricity, rust or corrode.

Catalog of Goggles, Masks and Respirators

An illustrated catalog of 32 loose-leaf pages, attractively and substantially bound, has been prepared for distribution by Willson Products, Inc., Reading, Pa., manufacturers of industrial safety devices—goggles of all types, respirators, fume and smoke masks, helmets, hand shields, etc.

Classified Advertising

Advertisements under this heading 45 cents a line per insertion, minimum charge, $1.35. In estimating, calculate six words to one line, and add one additional line for heading. Use this department to obtain help, find positions, buy and sell equipment, dispose of manufacturing properties, etc.

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